JbigDeaL JbigDeaL JbigDeaL JbigDeaL
Download from www.JbigDeaL.in Powered By © JbigDeaL™

GGSIPU chemistry 2013

1. The hybridization state of C-atom in butendioic acid is

 (a) sp^2 (b) sp^3

 (c) Both (a) and (b) (d) sp

2. The oxidation number of C-atom in CH_2CL_2 and CCL_4 are respectively

 (a) -2 and -4 (b) 0 and -4

 (c) 0 and 4 (d) 2 and 4

3. Phenolphthalein of pH range(8-10) is used in which of the following type of titration as a suitable indicator?

 (a) NH_4OH and HCL (b) NH_4OH and HCOOH

 (c) NH_4OH and $C_2H_4O_2$ (d) NaOH and $C_2H_4O_2$

4. Which of the following species has a highest bond energy?

 (a) O_2^{2-} (b) O_2^{+} (c) O_2^{-} (d) O_2

5. Which of the following is a weak acid ?

 (a) C_6H_6 (b) $CH_3-C\equiv CH$

 (c) $CH_2=CH_2$ (d) $CH_3-C\equiv C-CH_3$

6. A mixture containing 60% centane and 40%iso-octane will have

 (a) centane number 60 (b) centane number 40

 (c) octane number 40 (d) None of these

7. $A \xrightarrow{\text{Alc-KOH}} B \xrightarrow[CCL_4]{2CL_2} C \xrightarrow{Ca(OH)_2} D$

 Here the compound C will be

 (a) Lewisite
 (b) Westron
 (c) Acetylene tetrachloride
 (d) Both (b) and (c)

8. Which of the following is least hydrolysed?

JbigDeaL JbigDeaL JbigDeaL JbigDeaL Download from www.JbigDeaL.in Powered By © JbigDeaL JbigDeaL JbigDeaL JbigDeaL JbigDeaL

JbigDeaL JbigDeaL JbigDeaL JbigDeaL
Download from www.JbigDeaL.in Powered By © JbigDeaL™

(a) $BeCL_2$ (b) $MgCL_2$ (c) $CaCL_2$ (d) $BaCL_2$

9. The volume concentration of a 3% solution of hydrogen peroxide would be

(a) 9880 (b) 9.88 (c) 22.4 (d) 3

10. The energy produced related to mass defeat of 0.02 amu is

(a) 28.2 MeV (b) 931.5 MeV

(c) 18.62 MeV (d) None of these

11. A solution contains CL^-, I^- and SO_4^{2} ions in it. Which of the following ion is capable to precipitate all of above when added in this solution?

(a) Pb^{2+} (b) Ba^{2+} (c) Hg^{2+} (d) Cu^{2+}

12. The minimum number of carbon atoms in ketones which will show chain isomerism

(a) seven (b) four (c) six (d) five

13. In Victor Mayer's method 0.2g of an organic substance displaced 56 mL of air at STP, the molecular weight of the compound is

(a) 56 (b) 112 (c) 80 (d) 28

14. $^{14}C_6$ is a beta-active nucleus. A sample of $^{14}CH_4$ gas kept in a closed vessel shows increase in pressure with time. This is due to the

(a) formation of $^{14}NH_3$ and H_2

(b) formation of $^{14}BH_3$ and H_2

(c) formation of $^{14}C_2$ and H_2

(d) formation of $^{14}CH_3$, $^{14}NH_2$ and H_2

15. The bond angle around the central atom iis highest in

(a) SO_2 (b) BBr_3

(c) CS_2 (d) SF_4

16. For a d electron, the orbital angular momentum is

(a) $\sqrt{6}\frac{h}{2\pi}$ (b) $\sqrt{2}\frac{h}{2\pi}$

(c) $\sqrt{6}\frac{h}{2\pi}$ (d) $\frac{h}{2\pi}$

JbigDeaL JbigDeaL JbigDeaL JbigDeaL Download from www.JbigDeaL.in Powered By © JbigDeaL JbigDeaL JbigDeaL JbigDeaL JbigDeaL

JbigDeaL JbigDeaL JbigDeaL JbigDeaL
Download from www.JbigDeaL.in Powered By © JbigDeaL™

17. A gaseous mixture of O_2 and X containing 20 mole% of X, diffuses through a small hole in 234s while pure O_2 take 224s to diffuse through the same hole. The molecular mass of mixture is

(a) 34.9 (b) 46.6

(c) 32 (d) 44

18. The electronegativity of C,H,O,N and S are 2,5,2,1,3,5,3,0 and 2.5 respectively. Which of following bond is most polar?

(a) O-H (b) S-H

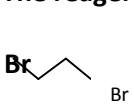
(c) N-H (d) C-H

19. ZnS can be existing in the ……structure other than zing blende structure.

(a) bcc (b) wurtzite

(c) simple cubic (d) rock salt

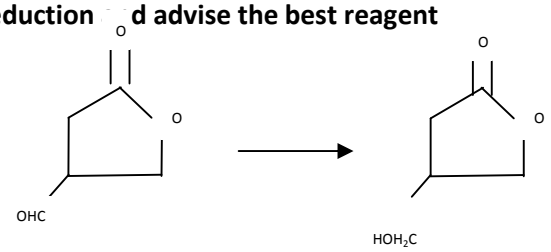
20. The reagent(s) for the following conversion,



$\rightarrow H-C\equiv C-H$ is are

(a) Alcoholic KOH
(b) Alcoholic KOH followed by $NaNH_2$
(c) Aqueous KOH followed by $NaNH_2$
(d) Zn/CH_3OH

21. Consider the following reduction and advise the best reagent



(a) HI/Red (b) LiA/H_4

(c) $NaBH_4$ (d) Zn-Hg/HCL

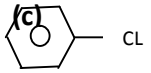
22. of the reagents is not used in the preparation of anisole via Williamson's synthesis?

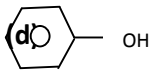
JbigDeaL JbigDeaL JbigDeaL JbigDeaL Download from www.JbigDeaL.in Powered By © JbigDeaL JbigDeaL JbigDeaL JbigDeaL JbigDeaL

JbigDeaL JbigDeaL JbigDeaL JbigDeaL
Download from www.JbigDeaL.in Powered By © JbigDeaL™

(a) Na

(b) CH_3—CL

(c) 

(d) 

23. Identify A anB based on the following reaction scheme.

CH_2CH_2COOH ($KMnO_4/OH^-$)

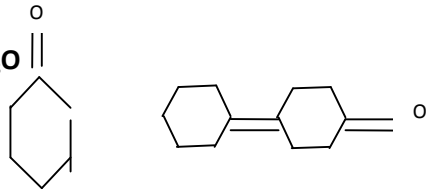
0

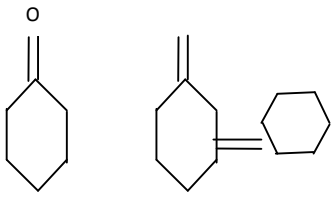
CH_2CH_2COOH

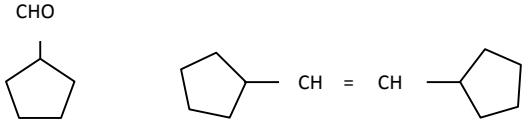
(A) (NH_2 - OH) → **($C_6H_{10}O$)**

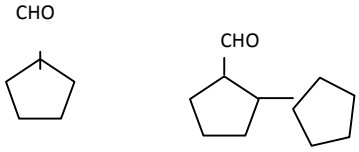
↓ 1. OH^-
↓ 2. a

(B) $C_{12}H_{18}O$

(a) 

(b) 

(c) 

(d) 

JbigDeaL JbigDeaL JbigDeaL JbigDeaL Download from www.JbigDeaL.in Powered By © JbigDeaL JbigDeaL JbigDeaL JbigDeaL JbigDeaL

JbigDeaL JbigDeaL JbigDeaL JbigDeaL
Download from www.JbigDeaL.in Powered By © JbigDeaL™

24. Which of the following carboxylic acid undergoes decarboxylation easily?

(a) $C_6H_5-CO-CH_2-COOH$

(b) $C_6H_5-CO-COOH$

(c) $C_6H_5-\underset{\underset{O}{\|}}{C}-COOH$

(d) $C_6H_5-\underset{\underset{O}{\|}}{C}-NH_2$

25. $CH_3NH_2 + CHCl_3 + KOH \rightarrow$ **Nitrogen containing compound is**

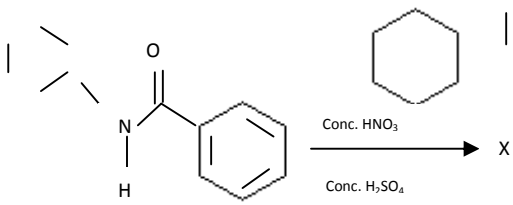
(a) $CH_3-C\equiv N$

(b) $CH_3-NH-CH_3$

(c) $CH_3-\overset{+}{N}\equiv C^-$

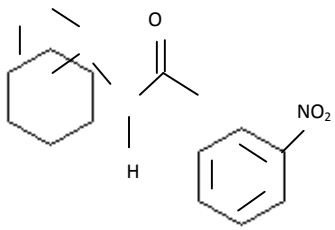
(d) $CH_3-N\equiv C^-$

26. In the following reaction



The structure of the major product X is

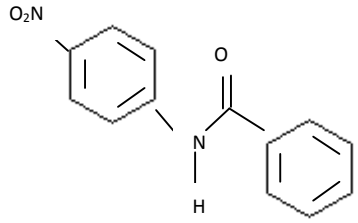
(a)



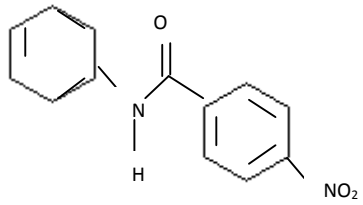
JbigDeaL JbigDeaL JbigDeaL JbigDeaL Download from www.JbigDeaL.in Powered By © JbigDeaL JbigDeaL JbigDeaL JbigDeaL JbigDeaL

JbigDeaL JbigDeaL JbigDeaL JbigDeaL
Download from www.JbigDeaL.in Powered By © JbigDeaL™

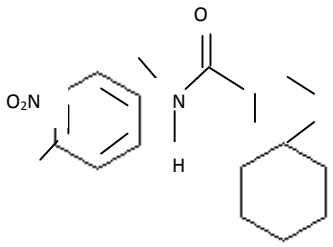
(b)



(c)

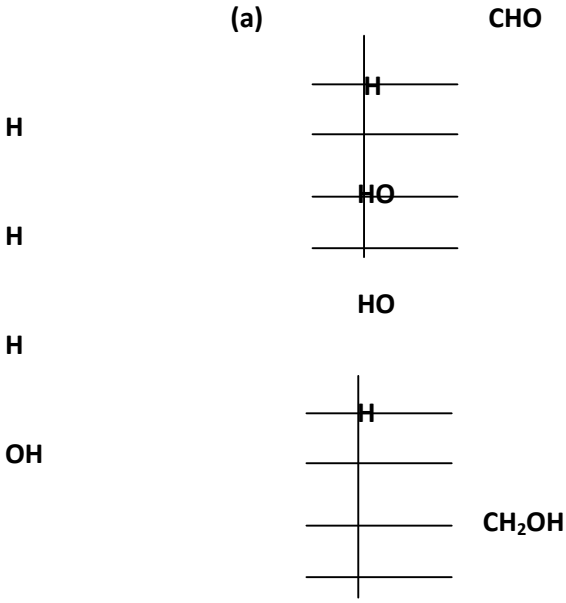


(d)

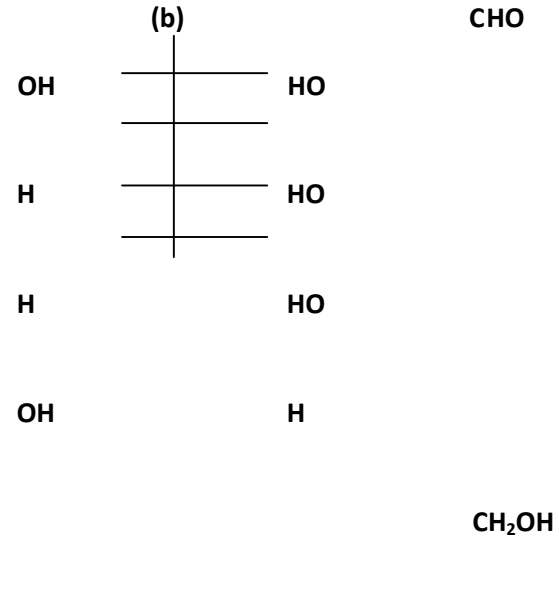


27. Which of the following monosaccharides yield an optically inactive alditol on $NaBH_4$ reduction?

(a)



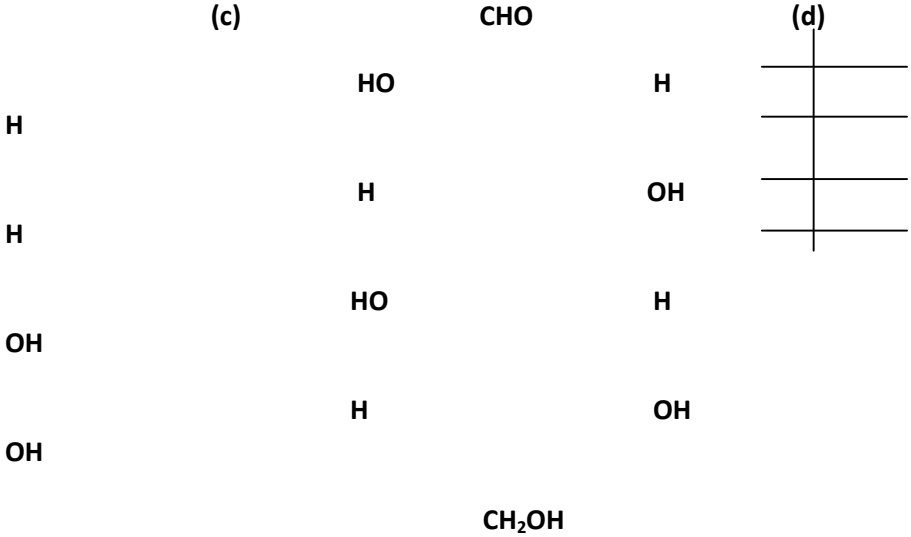
(b)



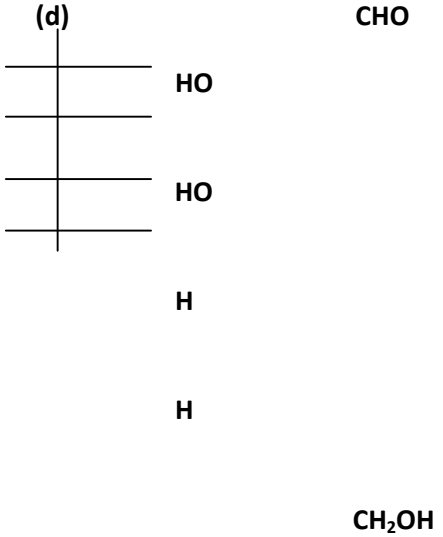
JbigDeaL JbigDeaL JbigDeaL JbigDeaL Download from www.JbigDeaL.in Powered By © JbigDeaL JbigDeaL JbigDeaL JbigDeaL JbigDeaL

JbigDeaL JbigDeaL JbigDeaL JbigDeaL
Download from www.JbigDeaL.in Powered By © JbigDeaL™

(c)



(d)



28. The monomer melamine has a chemical name

(a) 2,4,6- trimino – 1,3,5- trizine

(b) 1,3,5 – trimino – 2,4,6- trizine

(c) 2,4-dimino – 1,3,5- triazine

(d) 2 – amino – 1,3,5- triazine

29. For the reaction, N_2O_4 (g) $\rightleftharpoons$ 2 NO_2 (g); the relation connecting the degree of dissociation (~) of N_2O_4(g) with the equilibrium constant K_p is

(a) $\sim = \frac{\frac{K_p}{P}}{4+\frac{K_p}{K_p}}$ (b) $\sim = \frac{K_p}{4+K_p}$

(c) $\sim = \left(\frac{\frac{K_p}{P}}{4+\frac{K_p}{K_p}}\right)^{1/2}$ (d) $\sim = \left(\frac{K_p}{4+K_p}\right)^{1/2}$

30. If the solubility of calcium phosphate (mol. Wt = M) in water at 25^0C is μ g/100 mL, its solubility product at 25^0C is

(a) $10^9\left(\frac{w}{M}\right)^5$ (b) $10^7\left(\frac{w}{M}\right)^5$

(c) $10^5\left(\frac{w}{M}\right)^5$ (d) $10^3\left(\frac{w}{M}\right)^5$

31. Mass of one atom of an element is 6.64×10^{-23} g. This is equal to

(a) 6.64×10^{23} u (b) 40.0 u

JbigDeaL JbigDeaL JbigDeaL JbigDeaL Download from www.JbigDeaL.in Powered By © JbigDeaL JbigDeaL JbigDeaL JbigDeaL JbigDeaL

JbigDeaL JbigDeaL JbigDeaL JbigDeaL
Download from www.JbigDeaL.in Powered By © JbigDeaL™

(c) $\frac{1}{40}$ u (d) 6.64 u

32. Sulphide ores of metals are usually concentrated by froth floatation process. Which one of the following sulphide ores offers an exception and is concentrated by chemical leaching?

(a) Argentite (b) Galena

(c) Copper pyrite (d) Sphalerite

33. Soldiers of Napolean army which at Alps during freezing winter suffered a serious problem as regards to the tin buttons of their uniforms. White metallic tin buttons got covered by grey powder. This transformation is related to

(a) an interaction with nitrogen of the air at very low temperatures

(b) a change in the partial pressure of oxygen in the air

(c) a change in the crystalline structure of tin

(d) an interaction with water vapour contained in the humid air

34. Which of the following is a mixed oxide?

(a) Fe_2O_3 (b) PbO_2

(c) BaO_2 (d) pb_3O_4

35. If the quantum numbers for the 5th electron in carbon atom are 2,1,1, +$\frac{1}{2}$, then for the 6th electron, these values would be

(a) 1,1,0,$\frac{1}{2}$ (b) 2,0,1,+$\frac{1}{2}$

(c) 2,1,1 -$\frac{1}{2}$ (d) 2,1-1,+$\frac{1}{2}$

36. For the homogenous reaction.

$$4NH_3 + 5O_2 \rightleftharpoons 4NO + 6\ H_2O$$

The equilibrium constant K_c has the units

(a) Conc,$^{+10}$
(b) Conc, $^{+1}$
(c) Conc, $^{-1}$
(d) It is dimensionless

37. Which of the following behavior binary liquid solution?

JbigDeaL JbigDeaL JbigDeaL JbigDeaL Download from www.JbigDeaL.in Powered By © JbigDeaL JbigDeaL JbigDeaL JbigDeaL JbigDeaL

JbigDeaL JbigDeaL JbigDeaL JbigDeaL
Download from www.JbigDeaL.in Powered By © JbigDeaL™

(a) Plot of $1/^\circ_{total}$ vs $1/Y_A$ (mole fraction of A in vapour phase) is linear

(b) plot of $1/^\circ_{total}$ vs $1/y_B$ is linear

(c) plot of $1/^\circ_{total}$ vs $1/y_A\ y_B$ is linear

(d) plot of $1/^\circ_{total}$ vs y_A is linear

38. A 0.004 M solution of Na_2SO_4 is isotonic with a 0.010 M solution of glucose at the 25^0C. The apparent degree of dissociation of Na_2SO_4 is

(a) 25% (b) 50% (c) 75% (d) 85%

39. Cow milk an example of neutral emulsion is stabillised by

(a) fat (b) water

(c) casein (d) Mg^{2+} ions

40. The initial concentration of sugar solution is 0.12 M. On doing fermentation the concentration of sugar decreases to 0.06 M in 10 h and to 0.045 M to 15 h. The order of the reaction is

(a) 0.5 (b) 1.0 (c) 1.5 (d) 2.0

41. An athlete is given 100 g of glucose ($C_6H_{12}O_6$) of energy equivalent to 1560 kJ. He utilizes 50% of this gained energy in a n event. In order to avoid storage of energy in the body what is the weight of water he would need to perspire ? The enthalpy of evaporation of water is 44 kJ/mol.

(a) 319 g (b) 638 g (c) 14040 g (d) 35.45 g

42. Which of the following relationship is incorrect ?

(a) $\frac{\partial H - \Delta E}{\partial n\ xT}$ = constant (b) $\partial G = -T\Delta S_{Total}$

(c) $q = \partial U + W$ (d) $K = e^{-\Delta G^0}/RT$

43. A mixture of gases having different molecular weights is separated by which method ?

(a) Atmolysis (b) Metathesis

(c) Ostwald and Walker method

(d) Reverse osomosis

44. Boric acid is polymeric due to

(a) its acidic nature

(b) the presence of hydrogen bonds

JbigDeaL JbigDeaL JbigDeaL JbigDeaL Download from www.JbigDeaL.in Powered By © JbigDeaL JbigDeaL JbigDeaL JbigDeaL JbigDeaL

JbigDeaL JbigDeaL JbigDeaL JbigDeaL
Download from www.JbigDeaL.in Powered By © JbigDeaL™

(c) its monobasic nature

(d) its geometry

45. The metal ion which does not form coloured compound is

(a) chromonium (b) iron

(c) zinc (d) manganese

46. The type of isomerism present in pentaamine nitro cobalt (III) chloride is

(a) optical (b) linkage

(c) ionization (d) polymerization

47. Which of the following is known as invert soap?

(a) Pentaerythritol monostearate

(b) Sodium stearyl sulphate

(c) Trimethlsteary ammonium bromide

(d) Ethoxylated nonyphenol

48. The cell constant is the

(a) resistance x conductance

(b) resistance x specific conductance

(c) conductance x specific resistance

(d) resistance x specific resistance

49. It has been found experimentally that if standard reduction potential of oxidant – standard reduction potential of reductant is more than 1.7V then their combination lead to explosion (though it may be prevented by kinetic factors).

Now go through the following data and answer the questions.

$E^0_{Ag^+/Ag} = 0.80$ V

$E^0_{ClO^-_4/ClO^-_3} = 1.23$ V

$E^0_{Fe^{3+}/Fe^{2+}} = 0.77$ V

$E^0_{MnO^-_4/Mn^{3+}} = 1.54$ V

JbigDeaL JbigDeaL JbigDeaL JbigDeaL Download from www.JbigDeaL.in Powered By © JbigDeaL JbigDeaL JbigDeaL JbigDeaL JbigDeaL

JbigDeaL JbigDeaL JbigDeaL JbigDeaL
Download from www.JbigDeaL.in Powered By © JbigDeaL™

$E^0_{N_2/N_3^-} = -3.09$ V

$E^0_{Na^+/Na} = -2.17$ V

$E^0_{O_2/H_2O_2} = -1.03$ V

Which of the following ionic combinations may lead to the formation of explosive substance?

(a) Sodium ion and azide ion
(b) Silver ion and perchlorate ion
(c) Silver ion and azide ion
(d) All the above

50. For the reasction 2A + B→ product; doubling the initial concentrations of both reactants increase the rate by a factor of 8 and doubling the concentration of B above doubles the rate. The rate law for for the reaction is

(a) $r = k[A][B]^2$

(b) $r = k[A][B]$

(c) $r = k[A]^2[B]^2$

(d) $r = k[A]^2[B]$

JbigDeaL JbigDeaL JbigDeaL JbigDeaL Download from www.JbigDeaL.in Powered By © JbigDeaL JbigDeaL JbigDeaL JbigDeaL JbigDeaL